United States Department of Agriculture

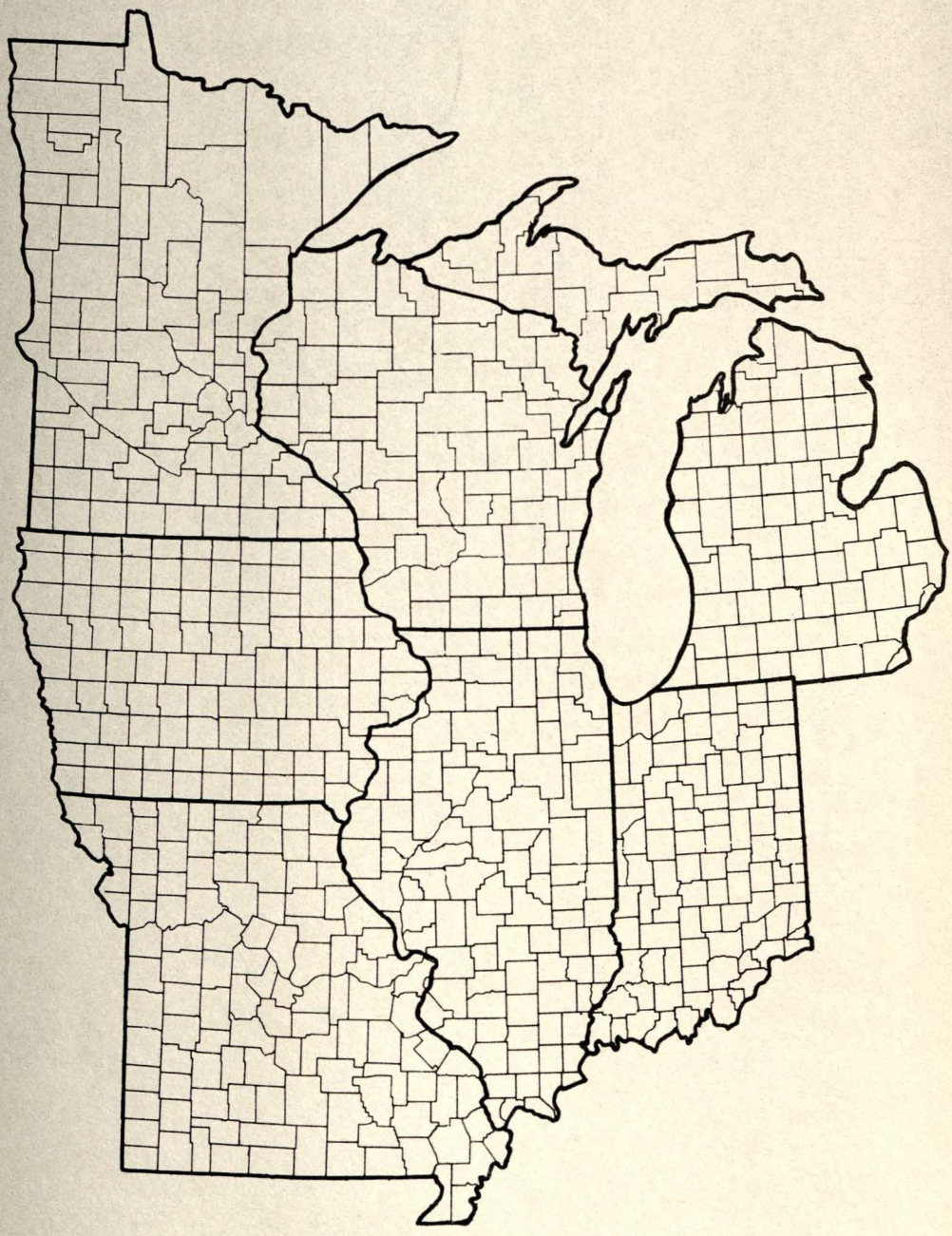
Forest Service

North Central Forest Experiment Station

Resource Bulletin **NC-106**

Pulpwood Production in the North-Central Region by County, 1986

James E. Blyth and W. Brad Smith



North Central Forest Experiment Station
Forest Service—U.S. Department of Agriculture
1992 Folwell Avenue
St. Paul, Minnesota 55108
Manuscript approved for publication February 16, 1988
1988

HIGHLIGHTS

Lake States

Pulpwood production rose 13 percent to a record 7.71 million cords in 1986. Hardwood pulpwood output (production) climbed 824 thousand cords (16 percent), and softwood output increased 46 thousand cords (3 percent). Eight percent of the total production was whole-tree chips; aspen remained the preferred species. Production of pulpwood increased 12 percent for pulp mills and 14 percent for flakeboard mills. Pulpwood output rose 18 percent in Michigan, 13 percent in Wisconsin, and 5 percent in Minnesota. Michigan's white birch harvest in 1986 was double that in 1985. Aspen harvested in Wisconsin reached a record high for the fourth consecutive year. In Minnesota, 78 out of every 100 cords of roundwood were aspen.

Softwood residue imports to the Lake States from other States (primarily South Dakota and Wyoming) fell to 114 thousand cords. Eighteen percent of Wisconsin's pulpwood requirements came from out of State. Michigan received 8 percent of its pulpwood needs from out of State.

Central States

Central States pulpwood production fell 18 percent to 331 thousand cords. Output dropped in Indiana and Missouri but rose in Illinois and Iowa. Two out of every three cords were residue from wood-using mills. Indiana accounted for 46 percent of the output, but had the lowest total production since 1975. Fifty-nine percent of the Central States output was exported to five adjacent States.

Pulpwood receipts climbed 1 percent to 138 thousand cords. Only 1 thousand cords were imported.

CONTENTS

	Page
Lake States	1
Production	1
Receipts	5
Industry Trends and Analysis	6
Central States	8
Production	8
Receipts	9
Industry Trends and Analysis	9
Appendix	14

PULPWOOD PRODUCTION IN THE NORTH-CENTRAL REGION BY COUNTY, 1986

James E. Blyth *and* W. Brad Smith

Pulpwood constitutes more than half the industrial timber products harvested annually in the Lake States (Michigan, Minnesota, and Wisconsin) and is an important product in the Central States (Illinois, Indiana, Iowa, and Missouri).

Current detailed information about pulpwood production[1] is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, and forest industry development. Also, scientists need current pulpwood information to plan research projects.

Since 1979, we have included logs, bolts, and wood residue used in manufacturing particleboard, waferboard, oriented strand board, and medium density fiberboard in this annual report. Together, these products are called flakeboards. Wood used at flakeboard mills is identical or nearly identical to wood used at pulp mills.

Because flakeboard mills use primarily aspen and wood residue, including them does not distort roundwood use trends for other species nor preclude comparing 1986 survey results with those of 1978 and previous years.

Pulp and flakeboard mills using North Central States timber in 1986 reported their pulpwood receipts[2] by species groups and counties of origin. This report presents the results of the survey, analyzes the data where appropriate, compares results with 1985 or earlier years, and discusses trends in pulpwood production and use.

The Lake States and Central States are discussed separately because the timber types in each area are different and less information can be released about the Central States (more detailed data on pulpwood production and receipts in the Central States would reveal the operations of individual mills). This is the 28th annual report of the pulpwood harvest in Lake States counties and the 27th annual report of the Central States harvest.

Several mills buy their pulpwood in green tons rather than in cords. Conversion factors used in the Lake States to convert green tons of pulpwood to standard cord equivalents are shown in the Appendix. Conversion factors used in the Central States are shown in footnote 1 of table 4.

Pulpwood production in Minnesota is completely and accurately shown. However, to prevent disclosure of confidential information about softwood pulpwood use by individual companies, the total quantity of softwood pulpwood imports and exports between Minnesota and Canada is not reported. [Thus, some Minnesota softwood shipped to Canada is shown as remaining and used in Minnesota, and receipts of Canadian softwood in Minnesota are understated].

LAKE STATES

Production

Pulpwood production climbed to a record 7.71 million cords[3] in 1986 from 6.84 million cords in 1985, a gain of 13 percent (table 1). The previous record of 7.19 million cords in 1984 was surpassed by 7 percent. New highs in output have been reached in 5 of the last 8 years. Of each 100 cords produced, 92 cords were

JAMES E. BLYTH is a Principal Market Analyst, and W. BRAD SMITH is a Principal Mensurationist with the North Central Forest Experiment Station, St. Paul, Minnesota.

[1] *Pulpwood production, determined from mill receipts, is the annual volume of pulpwood cut in a specific county or region, plus the annual wood residue volume produced by sawmills, veneer mills, etc., in a specific State or region that was used for pulp, particleboard, waferboard, oriented strand board, or medium density fiberboard.*

[2] *Pulpwood receipts are the volume of wood received by mills in a specific State or region, regardless of the geographic source.*

[3] *All references to cords are in standard cords. A standard cord is 128 cubic feet of wood, bark, and air space.*

Table 1.--Production and imports of pulpwood, Lake States, 1986

(In standard cords, unpeeled)

Species and destination	Production by States[1]				Imports			Total receipts
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S.[2]	Canada	Total imports	
Cedar								
Michigan	51,743	--	--	51,743	--	--	--	51,743
Total	51,743	--	--	51,743	--	--	--	51,743
Balsam fir								
Michigan	78,336	--	1,272	79,608	--	--	--	79,608
Minnesota	--	96,769	152	96,921	--	--	--	96,921
Wisconsin	14,030	769	44,210	59,009	--	--	--	59,009
Exported [3]	4,040	3,569	--	7,609	--	--	--	--
Total	96,406	101,107	45,634	243,147	--	--	--	235,538
Hemlock								
Michigan	39,272	--	488	39,760	--	--	--	39,760
Wisconsin	3,263	--	36,483	39,746	--	--	--	39,746
Total	42,535	--	36,971	79,506	--	--	--	79,506
Jack pine								
Michigan	194,887	--	363	195,250	--	1,139	1,139	196,389
Minnesota	--	92,507	7,623	100,130	--	--	--	100,130
Wisconsin	41,599	4,445	240,869	286,913	608[4]	--	608[4]	287,521
Exported [3]	--	880	--	880	--	--	--	--
Total	236,486	97,832	248,855	583,173	608	1,139	1,747	584,040
Red pine								
Michigan	45,430	--	363	45,793	--	--	--	45,793
Minnesota	--	28,488	5,718	34,206	--	--	--	34,206
Wisconsin	4,596	3,276	225,597	233,469	21	--	21	233,490
Exported [3]	--	2,599	--	2,599	--	--	--	--
Total	50,026	34,363	231,678	316,067	21	--	21	313,489
White pine								
Michigan	26,342	--	--	26,342	--	--	--	26,342
Minnesota	--	5,258	278	5,536	--	--	--	5,536
Wisconsin	2,135	--	19,540	21,675	57	--	57	21,732
Exported [3]	--	1,360	--	1,360	--	--	--	--
Total	28,477	6,618	19,818	54,913	57	--	57	53,610
Spruce								
Michigan	70,892	--	454	71,346	--	--	--	71,346
Minnesota	--	72,103	--	72,103	--	1,190	1,190	73,293
Wisconsin	15,696	17,427	30,205	63,328	--	--	--	63,328
Exported [3]	6,169	8,779	--	14,948	--	--	--	--
Total	92,757	98,309	30,659	221,725	--	1,190	1,190	207,967
Tamarack								
Michigan	3,736	--	--	3,736	--	--	--	3,736
Minnesota	--	10,800	--	10,800	--	--	--	10,800
Wisconsin	184	2,140	1,709	4,033	--	--	--	4,033
Total	3,920	12,940	1,709	18,569	--	--	--	18,569
Ash								
Michigan	16,280	--	3,253	19,533	--	--	--	19,533
Wisconsin	3,573	8	53,100	56,681	--	--	--	56,681
Total	19,853	8	56,353	76,214	--	--	--	76,214
Aspen								
Michigan	796,064	--	14,457	810,521	--	--	--	810,521
Minnesota	--	1,422,279	32,965	1,455,244	--	--	--	1,455,244
Wisconsin	183,108	26,248	1,160,912	1,370,268	10	--	10	1,370,278
Exported [3]	--	20,547	--	20,547	--	--	--	--
Total	979,172	1,469,074	1,208,334	3,656,580	10	--	10	3,636,043
Balsam poplar								
Michigan	30,338	--	--	30,338	--	--	--	30,338
Minnesota	--	45,902	2,596	48,498	--	--	--	48,498
Total	30,338	45,902	2,596	78,836	--	--	--	78,836
Basswood								
Michigan	43,021	--	8,725	51,746	--	--	--	51,746
Wisconsin	1,560	--	19,153	20,713	--	--	--	20,713
Total	44,581	--	27,878	72,459	--	--	--	72,459
Beech								
Michigan	36,443	--	246	36,689	--	--	--	36,689
Wisconsin	2,451	--	1,616	4,067	--	--	--	4,067
Total	38,894	--	1,862	40,756	--	--	--	40,756

(Table 1 continued on next page)

(Table 1 continued)

Species and destination	Production by States[1]				Imports			
	Michigan	Minnesota	Wisconsin	Regional total	Other U.S.[2]	Canada	Total imports	Total receipts
White birch								
Michigan	147,839	209	55,848	203,896	--	--	--	203,896
Minnesota	--	729	--	729	--	--	--	729
Wisconsin	4,057	9,082	201,174	214,313	--	--	--	214,313
Total	151,896	10,020	257,022	418,938	--	--	--	418,938
Yellow birch								
Michigan	62,368	--	5,975	68,343	--	--	--	68,343
Wisconsin	6,210	--	19,767	25,977	--	--	--	25,977
Total	68,578	--	25,742	94,320	--	--	--	94,320
Cottonwood								
Michigan	762	--	--	762	--	--	--	762
Total	762	--	--	762	--	--	--	762
Elm								
Michigan	21,918	--	2,866	24,784	--	--	--	24,784
Wisconsin	17,512	5	38,507	56,024	--	--	--	56,024
Total	39,430	5	41,373	80,808	--	--	--	80,808
Hickory								
Michigan	682	--	--	682	--	--	--	682
Wisconsin	--	--	558	558	--	--	--	558
Total	682	--	558	1,240	--	--	--	1,240
Hard maple								
Michigan	204,936	--	30,547	235,483	--	1,241	1,241	236,724
Wisconsin	28,726	53	164,390	193,169	--	--	--	193,169
Total	233,662	53	194,937	428,652	--	1,241	1,241	429,893
Soft maple								
Michigan	214,836	--	14,147	228,983	--	--	--	228,983
Wisconsin	10,852	30	115,162	126,044	--	--	--	126,044
Total	225,688	30	129,309	355,027	--	--	--	355,027
Red oak								
Michigan	123,393	--	14,571	137,964	--	--	--	137,964
Wisconsin	1,383	--	37,567	38,950	--	--	--	38,950
Total	124,776	--	52,138	176,914	--	--	--	176,914
White oak								
Michigan	37,955	--	--	37,955	--	--	--	37,955
Wisconsin	15	--	11,393	11,408	--	--	--	11,408
Total	37,970	--	11,393	49,363	--	--	--	49,363
Other hardwoods								
Michigan	12,859	--	2,966	15,825	--	--	--	15,825
Wisconsin	3,825	--	6,538	10,363	--	--	--	10,363
Total	16,684	--	9,504	26,188	--	--	--	26,188
Total roundwood								
Michigan	2,260,332	209	156,541	2,417,082	--	2,380	2,380	2,419,462
Minnesota	--	1,774,835	49,332	1,824,167	--	1,190	1,190	1,825,357
Wisconsin	344,775	63,483	2,428,450	2,836,708	696	--	696	2,837,404
Exported [3]	10,209	37,734	--	47,943	--	--	--	--
Total	2,615,316	1,876,261	2,634,323	7,125,900	696	3,570	4,266	7,082,223
Residue, softwoods								
Michigan	48,006	--	331	48,337	--	5,969	5,969	54,306
Minnesota	--	40,212	6,799	47,011	--	--	--	47,011
Wisconsin	4,993	5,359	44,456	54,808	114,157	23,190	137,347	192,155
Total	52,999	45,571	51,586	150,156	114,157	29,159	143,316	293,472
Residue, hardwoods								
Michigan	120,547	--	20,219	140,766	15,633	1,081	16,714	157,480
Minnesota	--	57,453	--	57,453	--	--	--	57,453
Wisconsin	18,708	10	220,151	238,869	1,392	--	1,392	240,261
Total	139,255	57,463	240,370	437,088	17,025	1,081	18,106	455,194
All wood material								
Michigan	2,428,885	209	177,091	2,606,185	15,633	9,430	25,063	2,631,248
Minnesota	--	1,872,500	56,131	1,928,631	--	1,190	1,190	1,929,821
Wisconsin	368,476	68,852	2,693,057	3,130,385	116,245	23,190	139,435	3,269,820
Exported [3]	10,209	37,734	--	47,943	--	--	--	--
Total	2,807,570	1,979,295	2,926,279	7,713,144	131,878	33,810	165,688	7,830,889

[1] Vertical columns of figures under the box heading "Production by States", present the amount of pulpwood cut in each State.

[2] Mostly western States.

[3] Pulpwood shipped to mills outside of region.

[4] Ponderosa pine.

roundwood (including chips from roundwood); the remainder was residue from wood-using plants.[4]

Principal species harvested were aspen (3,656 thousand cords), jack pine (583 thousand cords), hard maple (429 thousand cords), and white birch (419 thousand cords). Other major species each furnishing more than 200,000 cords were soft maple, red pine, balsam fir, and spruce.

Of the total pulpwood production, 78 percent was hardwoods, the highest proportion ever recorded, and a record 5.99 million cords, up 16 percent from 1985. Nearly all (99 percent) of the hardwood gains were in roundwood. Aspen increased the most in volume, followed by white birch, hard maple, and soft maple; each of these species was at record production levels. Only elm and balsam poplar had smaller harvests than in 1985.

Although the softwood proportion of the total production dropped from 24 percent in 1985 to 22 percent in 1986, total softwood output rose by 46 thousand cords. Most of the gain was in softwood residue, which reached a record output of 150 thousand cords. Roundwood harvest increases were concentrated in red pine and jack pine, while the major decline was in balsam fir.

Lake States whole-tree chip[5] (WTC) production rose 11 percent to 635 thousand cords and accounted for about 1 out of 12 cords of Lake States pulpwood output. WTC production from softwood and aspen fell, but output from other hardwoods climbed 54 percent. About 1 out of 5 cords produced in Michigan was WTC. After a sharp drop in 1985, Minnesota WTC output partially recovered. Wisconsin WTC output declined slightly and remained nominal. Production of WTC by species group and State was:

State	Softwoods	Aspen	Other hardwoods
	- - - - -	(Thousand cords)	- - - - -
Michigan	79	235	226
Minnesota	--	62	--
Wisconsin	--	28	5

Michigan.—Michigan's production of 2.81 million cords in 1986 eclipsed the old 1984 record by 17 percent. Increases in output were mainly in hard maple, soft maple, and white birch. White birch production was double that in 1985. About two-thirds of the hard maple was cut in the Western Upper Peninsula Unit. For the fourth consecutive year, aspen production reached a new high. The annual aspen harvest is up 55 percent since 1982. Three-fifths of the aspen was cut in the Northern Lower Peninsula Unit. Top-producing counties were Marquette, Delta, Iron, Menominee, and Dickinson.

Minnesota.—Minnesota producers supplied 1.98 million cords of pulpwood, up 5 percent from 1985. Aspen contributed most of the increase, with a gain of 108 thousand cords. Of every 100 cords of roundwood, 78 were aspen. For the first time ever recorded, the jack pine harvest fell below 100 thousand cords, but was offset by increases in red and white pine harvests. Five counties—St. Louis, Itasca, Koochiching, Beltrami, and Cass—supplied two-thirds of the roundwood.

Wisconsin.—Total production was at a new peak of 2.93 million cords in 1986, 13 percent above 1985. Aspen output reached a new record for the fourth consecutive year. Other species at peak production included white birch, red pine, hard maple, soft maple, and ash. Bayfield, Marinette, Forest, Oneida, and Vilas Counties were the leading roundwood producers.

In this report, we show the distribution of the harvest in two ways: first, the amount of pulpwood cut relative to the growing-stock volume in each of five major pulpwood species (fig. 1); and, second, the amount of pulpwood cut relative to commercial forest area (fig. 2). For the major supply areas, pulpwood harvesting was most intensive for jack pine in the Northeastern and Central Wisconsin Survey Units and the Western Upper Peninsula Unit of Michigan; for red pine in the Central Unit of Wisconsin; for spruce in the Northern Pine Unit of Minnesota and the Eastern Upper Peninsula Unit of Michigan; for balsam fir in the Northern Pine Unit of Minnesota and the Northeastern Wisconsin Unit; and for aspen in the Northeastern and Northwestern Wisconsin Units, the Northern Pine Unit of Minnesota, and the Northern Lower Peninsula Unit of Michigan.

[4] *Residue is the byproduct from sawmills, veneer mills, cooperage mills, and other wood-using mills that is used for pulping and flakeboard. Residue includes slabs, edgings, veneer cores, sawdust, wood flour, and chips manufactured from slabs, edgings, and veneer cores.*

[5] *Pulpwood produced from chipping entire trees (all portions of trees above ground, except the stumps).*

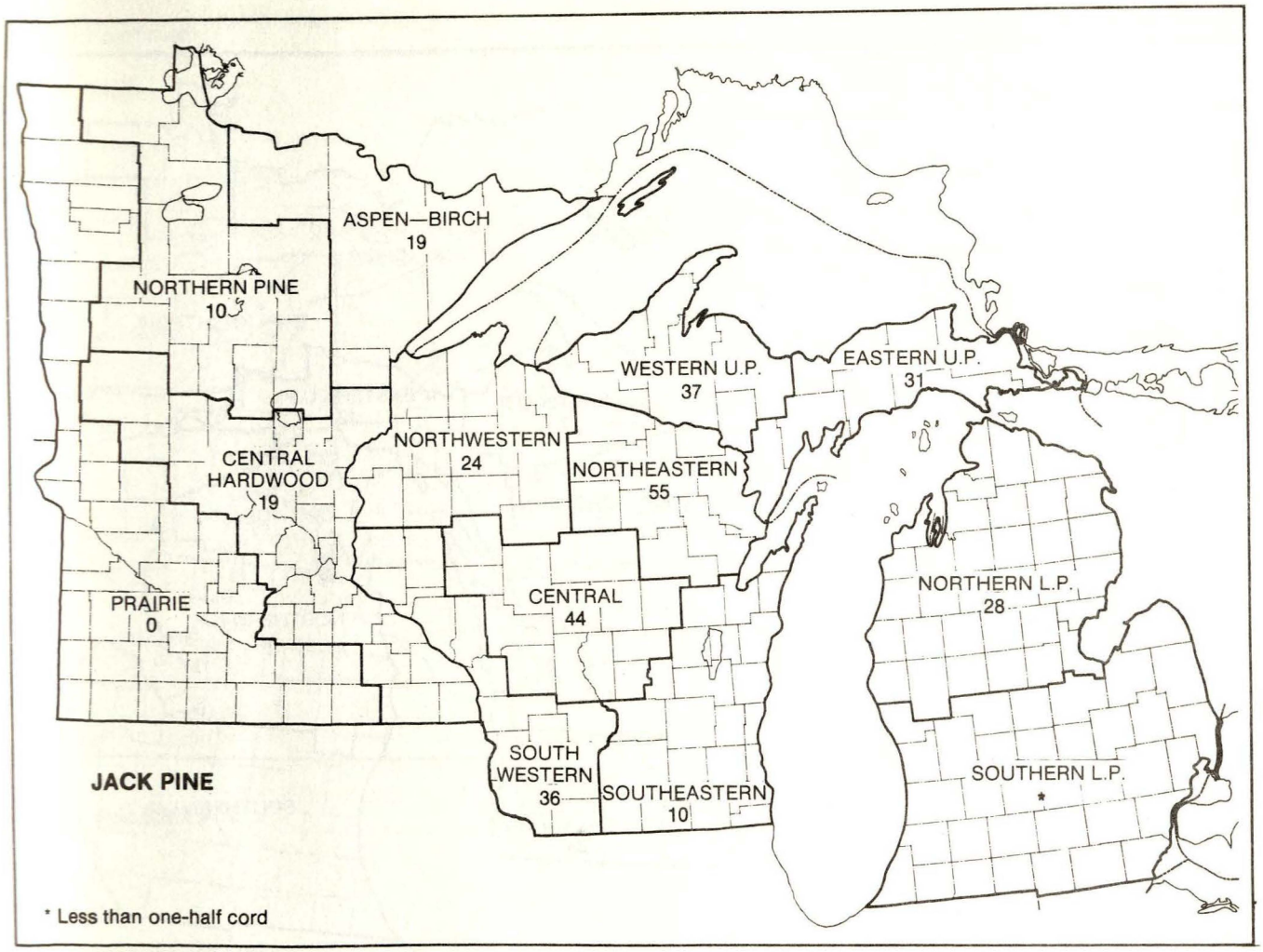


Figure 1.—*Cords of roundwood pulpwood (including chips from roundwood) harvested per 1,000 cords of merchantable volume for each of five principal pulpwood species by Forest Survey Unit, 1986. Merchantable volume was determined during the last forest inventory in each State.*

More than 250 cords of pulpwood were harvested per 1,000 acres of stocked commercial forest land in the following counties:

Michigan	Minnesota	Wisconsin
Delta	Clearwater	Florence
Menominee	Itasca	Forest
Dickinson	Mille Lacs	Langlade
Marquette		Lincoln
Crawford		Marinette
Mecosta		Oneida
Osceola		Vilas
		Bayfield
		Washburn

Receipts

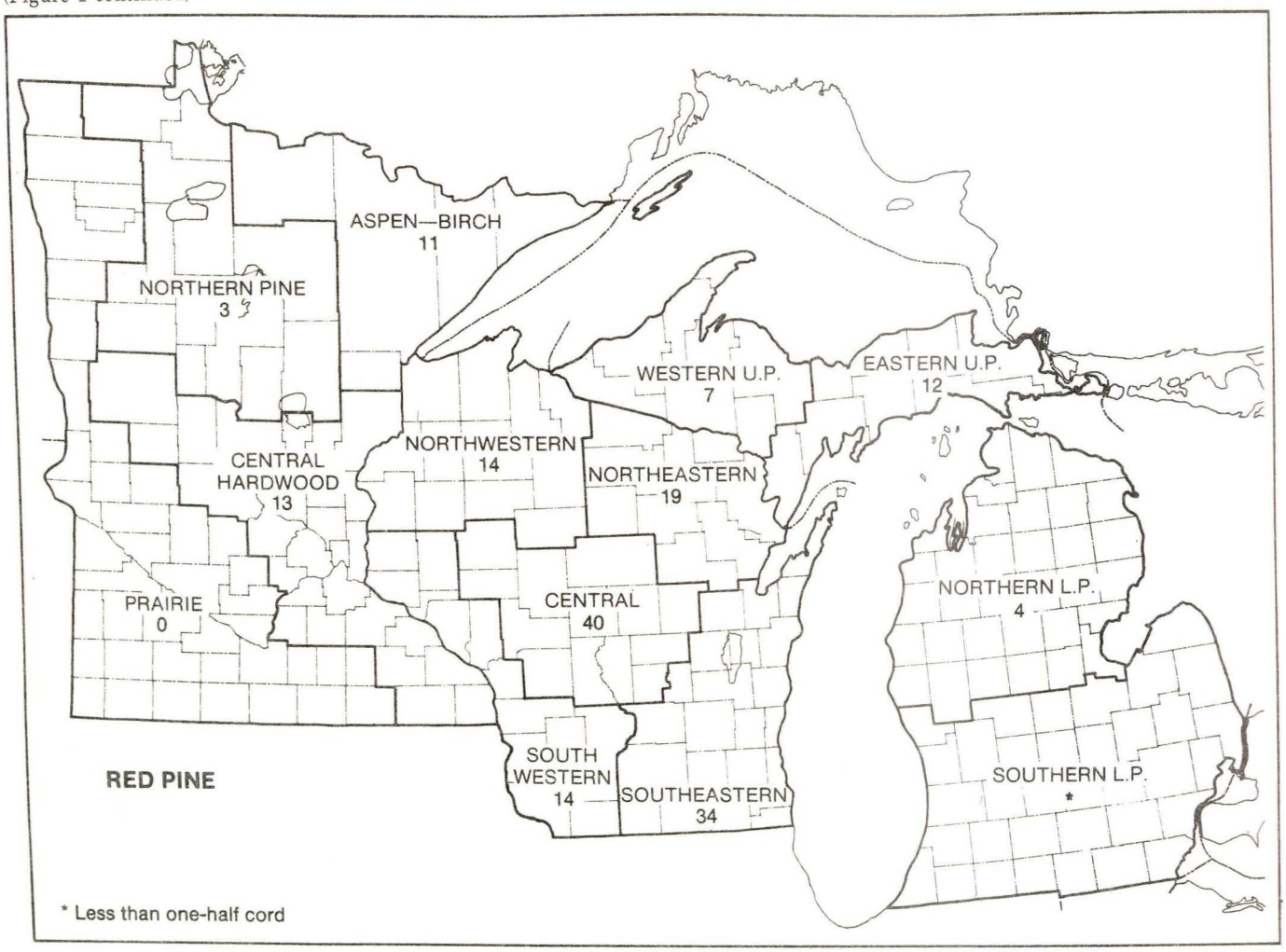
Thirty-six pulp and eleven flakeboard mills received 7.83 million cords of pulpwood in 1986, up 13 percent from 1985. Forty-one of forty-seven operating mills used aspen, 19 used birch, and 18 used maple (table 2).

Each Lake State furnishes many mills with pulpwood, including mills outside the Lake States area. During 1986, Michigan supplied 27 mills, Wisconsin supplied 27 mills, and Minnesota supplied 25 mills.

Softwood residue imports from Canada climbed for the second straight year after falling for 4 consecutive years. Shipments of softwood residue to the Lake States from other areas of the U.S. fell for the third year in a row to 114 thousand cords; South Dakota and Wyoming were the primary suppliers. Softwood residue imports from other areas of the U.S. peaked in 1973 at 295 thousand cords and have never been within 60 thousand cords of that level since then.

Michigan.—Eight percent of the 2.63 million cords received at 10 Michigan mills came from out of State. Principal imports were white birch, hardwood residue, and hard maple.

(Figure 1 continued)



Wisconsin.—Out-of-State sources supplied 18 percent of the 3.27 million cords to 23 Wisconsin mills. Michigan furnished 368 thousand cords, Minnesota 69 thousand cords, other (primarily Western) States 116 thousand cords, and Canada 23 thousand cords. Chief imports were aspen, softwood residue, jack pine, spruce, and hard maple.

Minnesota.—Minnesota pulpwood receipts are not fully reported (see earlier explanation).

Industry Trends and Analysis

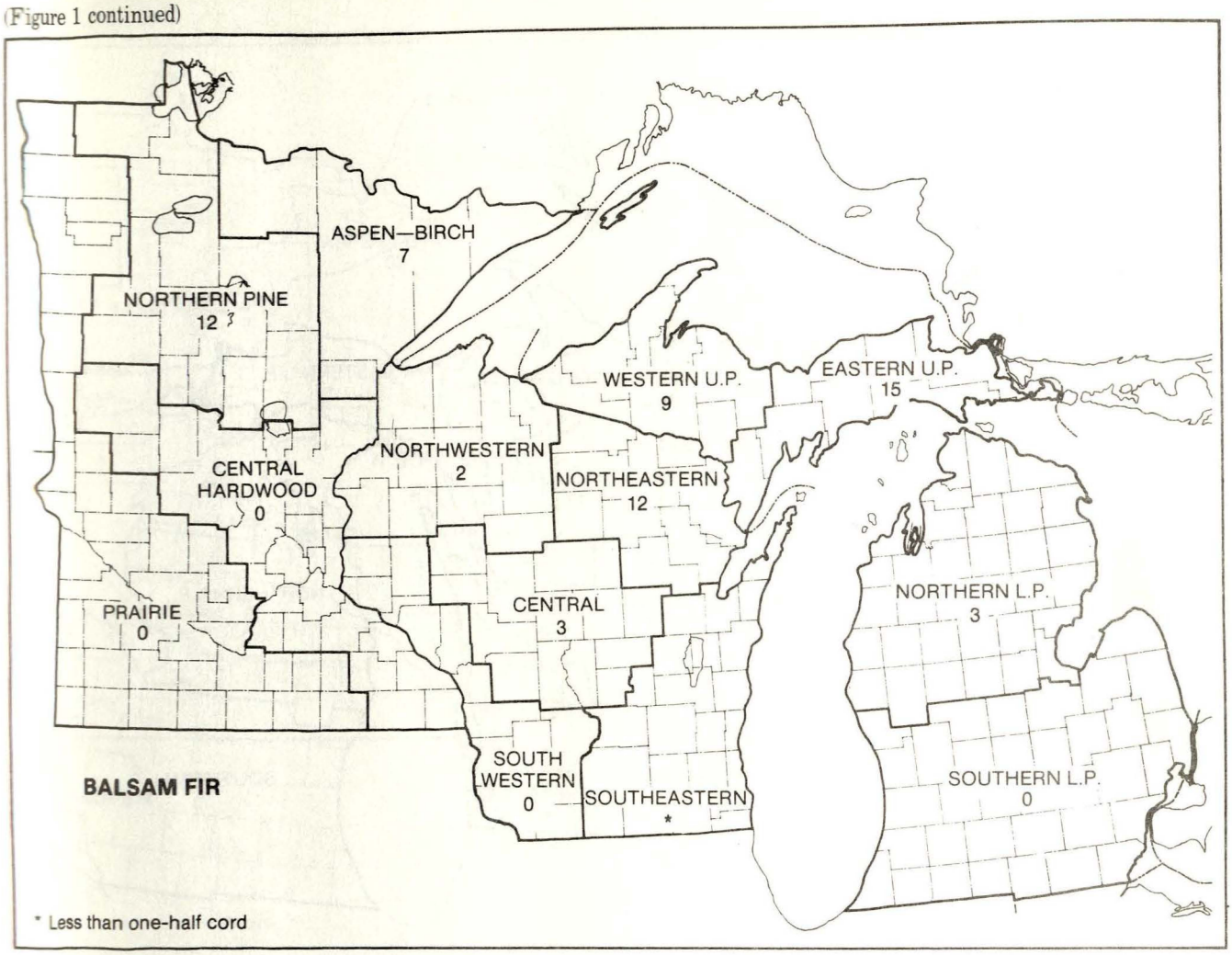
Pulp mills

Average daily pulp production rose 2 percent to 11,165 tons per day in 1986 (table 3). At least four mill expansions led to the increased production. One mill closed during 1986.

Lake States pulpwood production for pulp mills in 1984, 1985, and 1986 was:

Species	Production		
	1984	1985	1986
	(Thousand cords)		
Roundwood			
Aspen	2,273	2,109	2,202
Other species	2,899	2,672	3,210
Residue	493	452	470
Total	5,665	5,233	5,882

(Figure 1 continued)



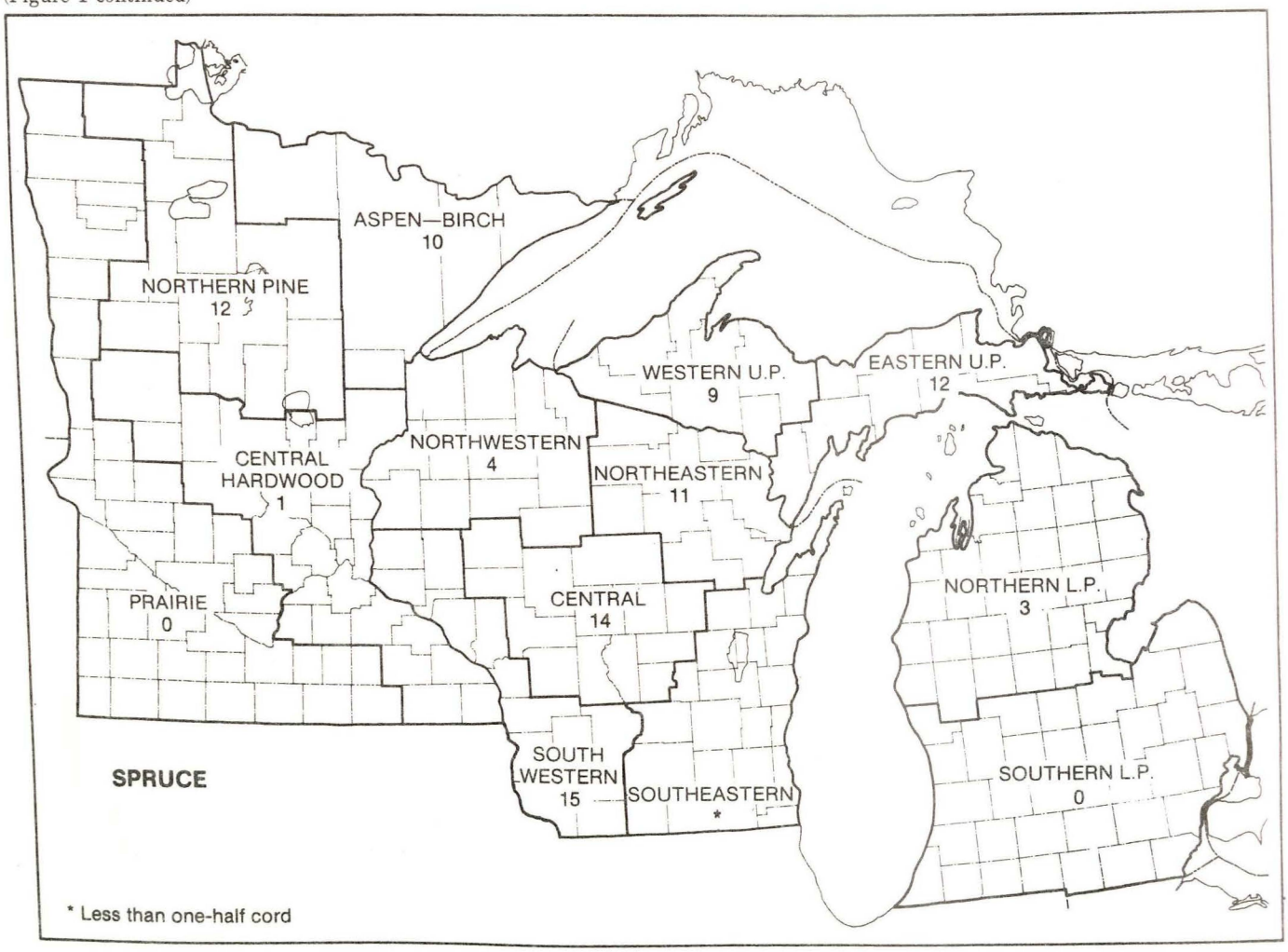
The 12-percent rise in Lake States pulpwood production for pulp mills is excellent compared with the 5.7 percent climb in U.S. woodpulp production in 1986.

Flakeboard mills

No new mills began production in 1986, but some relatively new mills were expanding their output. Annual production capacity of the Lake States flakeboard mills was 1,050 million square feet as shown in next column:

Company	Location	Capacity (Million square feet 3/4-inch basis)
Champion International Corp.	Gaylord, MI	175
Louisiana-Pacific	Newberry, MI	50
Weyerhaeuser Co.	Grayling, MI	160
Louisiana-Pacific	Two Harbors, MN	75
Blandin Wood Products Co.	Grand Rapids, MN	125
Northwood Panelboard Co.	Bemidji, MN	80
Potlatch Corp.	Bemidji, MN	80
Potlatch Corp.	Cook, MN	80
Louisiana-Pacific	Hayward, WI	130
Rodman Industries	Marinette, WI	30
Weyerhaeuser Co.	Marshfield, WI	65
All companies		1,050

(Figure 1 continued)



Lake States pulpwood production for flakeboard mills in 1984, 1985, and 1986 was:

Species	Production		
	1984	1985	1986
		(Thousand cords)	
Roundwood			
Aspen	1,284	1,302	1,455
Other species	158	215	259
Residue	85	93	117
Total	1,527	1,610	1,831

Lake States pulpwood production for flakeboard climbed 14 percent, partly because housing starts were 3.7 percent above those in 1985—1.806 million units in 1986, the highest unit total since 1978.

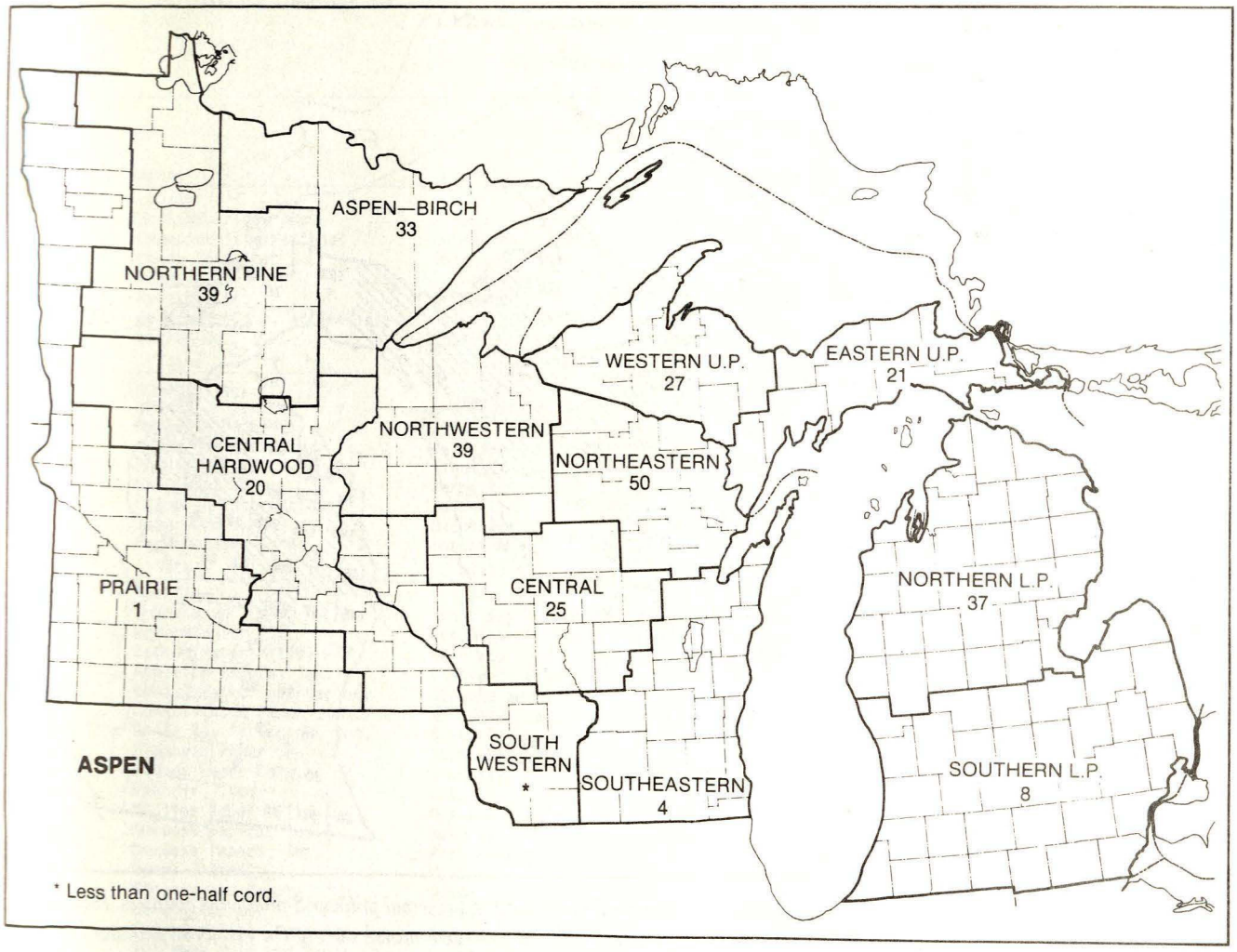
An overview of both industry segments in 1987 (pulp mills and flakeboard mills) shows three companies being acquired by other companies. Two new mills (one pulp and one flakeboard) are expected to begin production in 1987; one pulp mill closed. A boiler explosion at one firm caused a temporary cutback in its pulp production. At least one mill is expanding pulping capacity, and another plans a major increase in pulping capacity by 1989.

CENTRAL STATES

Production

Pulpwood production plunged 18 percent to 331 thousand cords (table 4), the lowest production since 1967. Two out of every three cords were residue. The harvest of soft hardwoods was the smallest ever recorded, displacing the previous low in 1982. Demand rose for hard hardwoods and softwoods and fell for Central States mill residue. Exports from the Central States (chiefly hardwood residue) fell below 200 thousand cords for the first time since

(Figure 1 continued)



1975. Fifty-nine percent of the pulpwood was shipped to Kentucky, Michigan, Wisconsin, Ohio, and Oklahoma mills.

Indiana, the leading producer, furnished 32 percent less pulpwood in 1986 than in 1985. Indiana's production was the lowest since 1975. Output was nominally higher in Illinois and Iowa in 1986 and slightly lower in Missouri.

Loggers harvested pulpwood in 22 Illinois counties, 18 Indiana counties, 16 Missouri counties, and 8 Iowa counties (fig. 3). Producing areas expanded in southern Illinois, central Indiana, and northeast Iowa, but contracted in east central Illinois and northeast Missouri.

Receipts

Three Central States pulp mills received 138 thousand cords in 1986 compared to 136 thousand cords in 1985. Higher receipts of hard hardwoods and of hardwood residue from wood-using mills more than offset the drop in soft hardwood receipts. No softwoods were used for pulp in the Central States for the third consecutive year. Only 1 thousand cords were imported.

Industry Trends and Analysis

Average daily pulp production remained at 470 tons (table 5). No changes in average daily production are anticipated.

Mills in adjacent States are likely to remain the dominant markets for Central States pulpwood despite the precipitous drop in shipments to these mills in 1986. Pulpwood imports by Central States mills will probably remain nominal.

Hardwood residue from Central States wood-using mills should continue to be the dominant type of pulpwood in the Central States, notwithstanding the major decline in use during 1986.

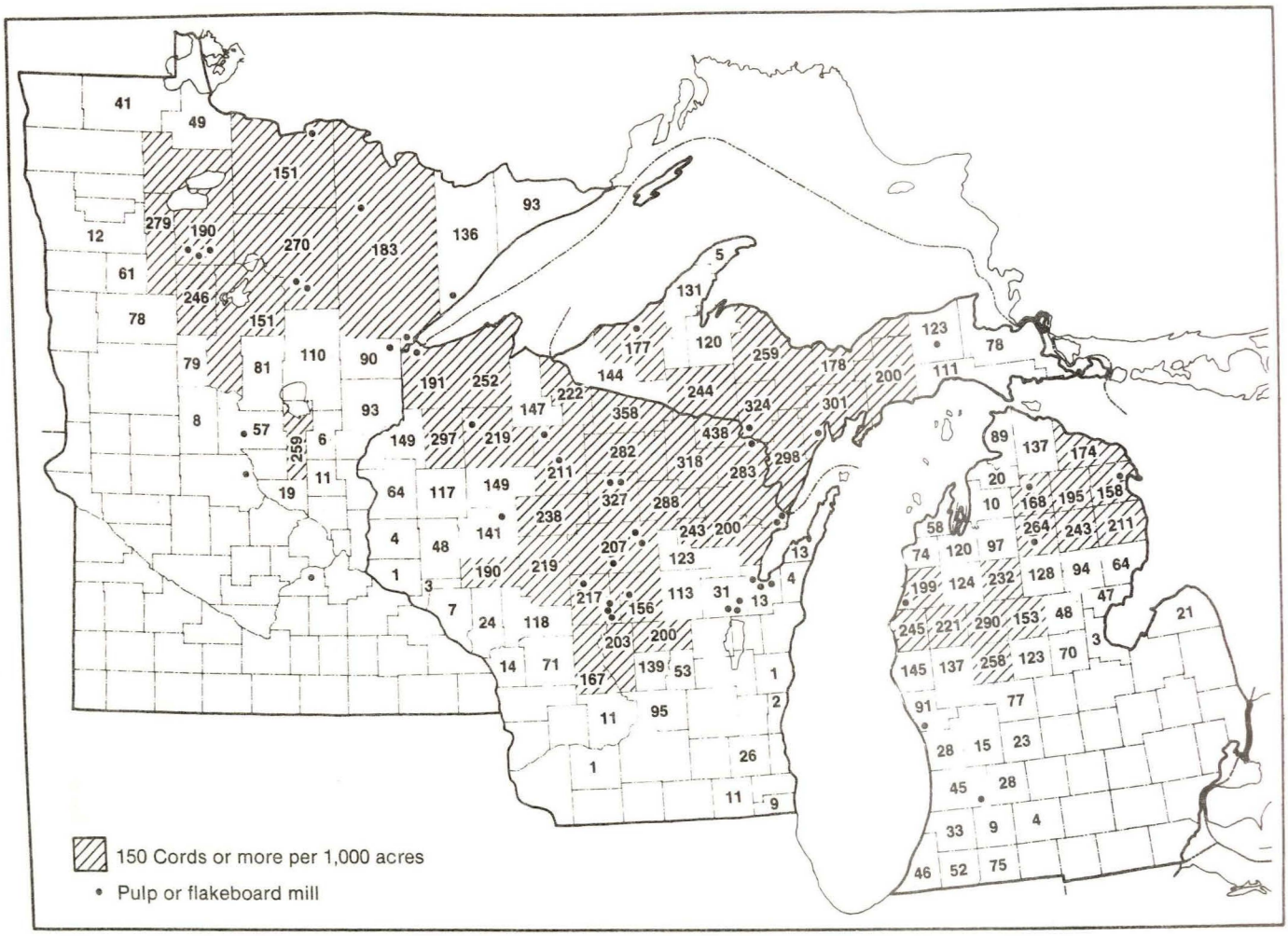


Figure 2.—*Cords of pulpwood cut per 1,000 acres of stocked commercial forest land in principal pulpwood-producing counties, 1986. Acres of stocked commercial forest land (stocking of trees greater than 16.7 percent) were determined during the last forest inventory in each State. Locations of active pulp and flakeboard mills are shown.*

Table 2.--Numbers of industrial plants in the Lake States using a particular species or residue for pulping and flakeboard in 1986

Species and kind of material	Total Lake States	State		
		Michigan	Minnesota	Wisconsin
Aspen	41	9	13	19
Balsam fir	13	3	4	6
Birch	19	7	1	11
Hemlock	8	2	--	6
Pine	11	5	2	4
Spruce	14	3	5	6
Tamarack	6	1	2	3
Maple	18	9	--	9
Oak	15	8	--	7
Other hardwoods	20	8	4	8
Softwood residue	13	3	2	8
Hardwood residue	18	8	1	9
Total plants[1/]	47	10	13	24

[1/] Some plants use more than one species, so numbers in columns are not additive.

Table 3.--Average daily production of active woodpulp mills in the Lake States by mill, location, and type of pulp produced, 1986

(In tons per 24 hours)[1/]

Company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Michigan						
Abitibi-Price, Inc.	Alpena	430	--	--	430	--
Champion International	Quinnesee	750	--	750	--	--
Stone Container	Ontonagon	575	--	--	--	575
Mead Corp.	Escanaba	800	--	600	200	--
Menasha Corp.	Otsego	225	--	--	--	225
Packaging Corp. of America	Filer City	600	--	--	--	600
Warren Co., S.D.	Muskegon	250	--	250	--	--
Total	7 mills	3,630	--	1,600	630	1,400
Minnesota						
Blandin Paper Co.	Grand Rapids	300	--	--	300	--
Hennepin Paper Co.	Little Falls	75	--	--	75	--
Boise Cascade Corp.	International Falls	380	--	380	--	--
Potlatch Corp.	Cloquet	520	--	520	--	--
Superwood Corp.	Bemidji	100	--	--	100	--
Champion International	Sartell	385	--	--	385	--
Superwood Corp.	Duluth	350	--	--	350	--
Certain-Teed Corp.	Shakopee	80	--	--	80	--
Total	8 mills	2,190	--	900	1,290	--
Wisconsin						
James River Corp.	Green Bay	160	160	--	--	--
Weyerhaeuser Co.	Rothschild	200	200	--	--	--
Badger Paper Mills	Peshtigo	100	100	--	--	--
Appleton Papers, Inc.	Combined Locks	200	--	--	200	--
Consolidated Papers, Inc.	Stevens Point	310	--	--	310	--
Consolidated Papers, Inc.	Wisconsin Rapids	900	--	600	300	--
Green Bay Packaging, Inc.	Green Bay	200	--	--	--	200
Flambeau Paper Co.	Park Falls	120	120	--	--	--
Midtec Paper Corp.	Kimberly	180	--	--	180	--
Pentair, Inc.	Niagara	210	--	--	210	--
Mosinee Paper Mills Co.	Mosinee	220	--	220	--	--
Nekoosa Papers, Inc.	Nekoosa	335	--	335	--	--
Nekoosa Papers, Inc.	Port Edwards	235	235	--	--	--
Owens-Illinois	Tomahawk	1,000	--	--	--	1,000
Procter and Gamble, Inc.	Green Bay	2/	2/	2/	2/	2/
Genstar Corp.	Cornell	100	--	--	100	--
Superior Fiber Products Co.	Superior	140	--	--	140	--
Thilmany Pulp and Paper Co.	Kaukauna	400	--	400	--	--
Tomahawk Pulp Co., Inc.	Tomahawk	50	--	--	50	--
Wausau Paper Mills Co.	Brokaw	185	185	--	--	--
Superwood Corp.	Phillips	100	--	--	100	--
Total	21 mills	5,345	1,000	1,555	1,590	1,200
All States	36 mills	11,165	1,000	4,055	3,510	2,600

1/ Lockwood's Directory of the Paper and Allied Industries -- 1987.

2/ Capacity not available.

Table 4.--Production and imports of pulpwood, Central States, 1986

(In standard cords, unpeeled)[1/]

Species and destination	Production by States[2/]					Imports			Total receipts
	Illinois	Indiana	Iowa	Missouri	Regional total	Lake States	Other U.S.	Total imports	
Softwoods									
Exported [4/]	9,179	--	--	2,320	11,499	--	--	--	--
Total	9,179	--	--	2,320	11,499	--	--	--	--
Soft hardwoods									
Central States [3/]	2,275	11,163	--	6,000	19,438	--	529	529	19,967
Exported [4/]	6,817	--	10	1,091	7,918	--	--	--	--
Total	9,092	11,163	10	7,091	27,356	--	529	529	19,967
Hard hardwoods									
Central States [3/]	8,695	10,966	10,614	6,499	36,774	--	518	518	37,292
Exported [4/]	10,541	12,066	--	10,854	33,461	--	--	--	--
Total	19,236	23,032	10,614	17,353	70,235	--	518	518	37,292
Total roundwood									
Central States [3/]	10,970	22,129	10,614	12,499	56,212	--	1,047	1,047	57,259
Exported [4/]	26,537	12,066	10	14,265	52,878	--	--	--	--
Total	37,507	34,195	10,624	26,764	109,090	--	1,047	1,047	57,259
Residue, softwoods									
Exported [4/]	2,342	--	4,330	2,165	8,837	--	--	--	--
Total	2,342	--	4,330	2,165	8,837	--	--	--	--
Residue, hardwoods									
Central States [3/]	19,066	42,194	6,001	13,387	80,648	--	--	--	80,648
Exported [4/]	10,468	76,992	--	44,511	131,971	--	--	--	--
Total	29,534	119,186	6,001	57,898	212,619	--	--	--	80,648
All wood material									
Central States [3/]	30,036	64,323	16,615	25,886	136,860	--	1,047	1,047	137,907
Exported [4/]	39,347	89,058	4,340	60,941	193,686	--	--	--	--
Total	69,383	153,381	20,955	86,827	330,546	--	1,047	1,047	137,907

[1/] Factors used in converting to standard green cords (128 cu.ft. including bark and air space) were:
4,266 pounds of softwood roundwood;
4,795 pounds of soft hardwood roundwood;
5,394 pounds of hard hardwood roundwood;
4,100 pounds of softwood chips (green mill residue);
4,400 Pounds of hardwood chips (green mill residue);
2,500 Pounds of chips (all species, dry mill residue).

[2/] Vertical columns of figures under box heading "Production by States" present the amount of pulpwood cut in each State.

[3/] Combined to prevent disclosure of individual mill receipts.

[4/] Pulpwood shipped to mills outside the region.

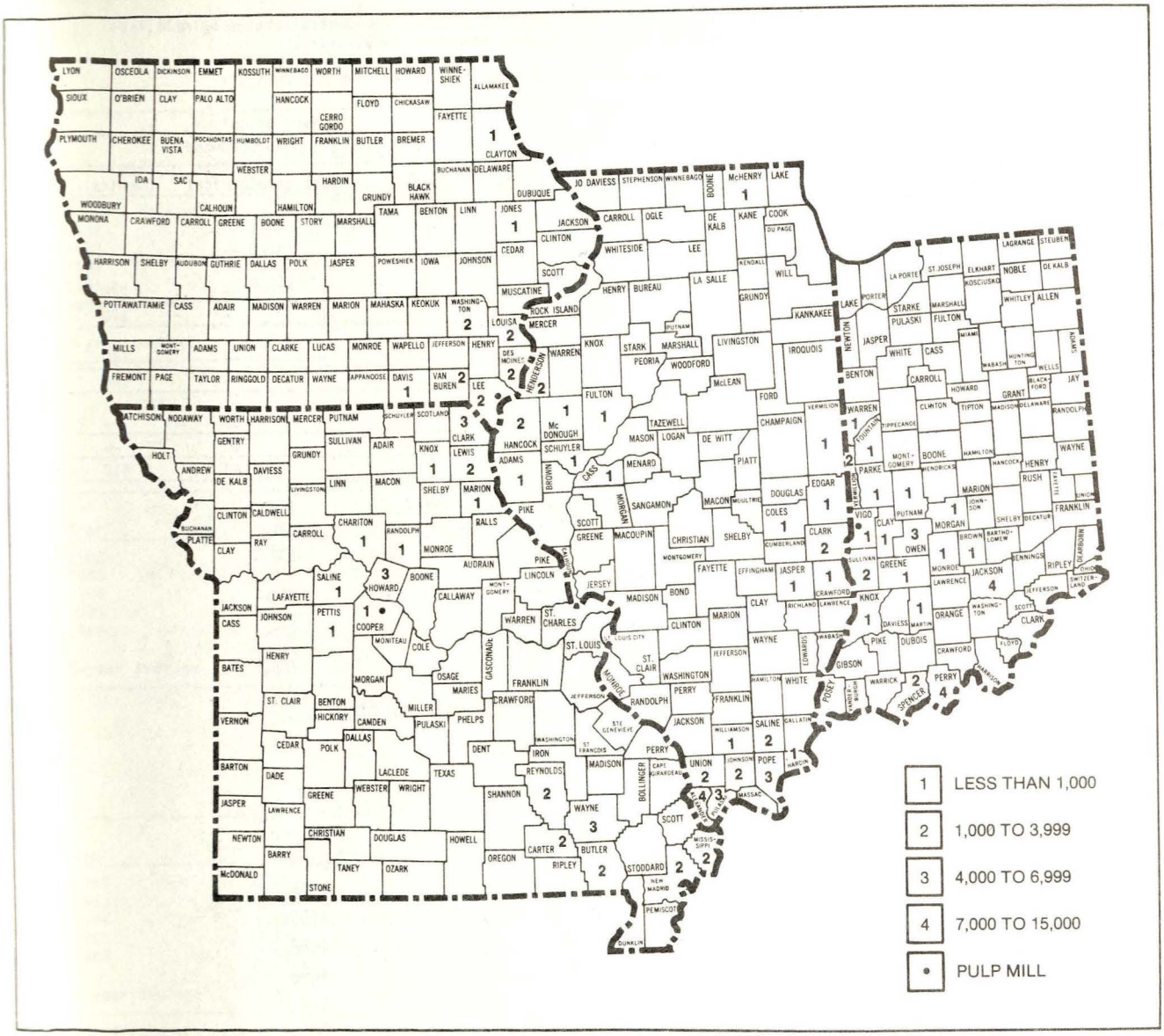


Figure 3.—*Production of pulpwood from roundwood (including chips from roundwood) in the Central States by counties, in standard cords, 1986. Locations of active pulp mills are shown.*

Table 5.--Average daily production of active woodpulp mills in the Central States by mill, location, and type of pulp produced, 1986

(In tons per 24 hours)[1/]

Company	Location	All types	Type of pulp			
			Sulfite	Kraft	Groundwood and other mechanical	Semi-chemical
Illinois						
(No current operations)						
Total	0 mills	--	--	--	--	--
Indiana						
Weston Paper and Mfg. Co.	Terre Haute	270	--	--	--	270
Total	1 mill	270	--	--	--	270
Iowa						
Consolidated Packaging Corp.	Fort Madison	140	--	--	--	140
Total	1 mill	140	--	--	--	140
Missouri						
Huebert Fibreboard, Inc.	Booneville	60	--	--	60	--
Total	1 mill	60	--	--	60	--
All states	3 mills	470	--	--	60	410

[1/] Lockwood's Directory of the Paper and Allied Industries -- 1987.

APPENDIX

Conversion Factors Used in the Lake States

Standard cords of green roundwood per green ton:

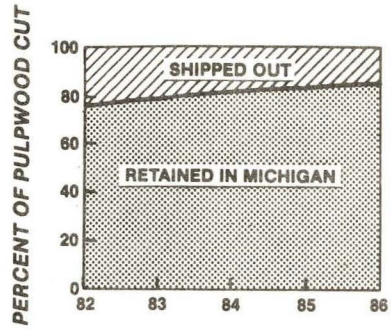
Species	Factor
Cedar	0.6329
Balsam fir	.4688
Hemlock	.4150
Jack pine	.4688
Red pine	.4688
White pine	.4777
Spruce	.5014
Tamarack	.4291
Ash	.4330
Aspen	.4291
Balsam poplar	.4083
Basswood	.5167
Beech	.3956
White birch	.4018
Yellow birch	.3723
Cottonwood	.4291
Elm	.4018
Hickory	.3701
Hard maple	.3617
Soft maple	.4083
Red oak	.3444
White oak	.3723
Other species	.4688

Table 6.--Lake States pulpwood production by State of origin and destination, 1982-1986

(In thousand standard cords, unpeeled)

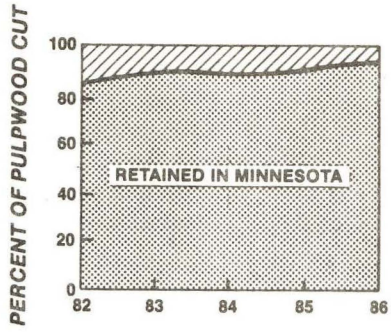
MICHIGAN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1982	1,751	--	396	1,340	15
1983	2,157	--	391	1,747	19
1984	2,398	--	442	1,934	22
1985	2,376	--	392	1,972	12
1986	2,808	--	369	2,429	10
5-year average	2,298	--	398	1,884	16



MINNESOTA

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1982	1,484	1,264	179	--	41
1983	1,910	1,720	155	--	35
1984	2,150	1,888	184	--	78
1985	1,880	1,714	105	--	61
1986	1,979	1,872	69	1/	38
5-year average	1,881	1,692	138	1/	51



WISCONSIN

Year	Total cut	Destination of pulpwood			
		Minnesota	Wisconsin	Michigan	Other
1982	2,286	27	2,231	28	--
1983	2,475	53	2,399	23	--
1984	2,644	65	2,534	45	--
1985	2,588	59	2,465	64	1/
1986	2,926	56	2,693	177	--
5-year average	2,584	52	2,464	68	1/

1/ Less than 500 cords.

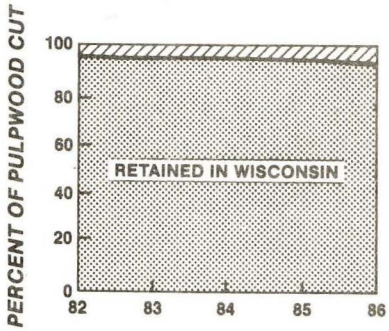


Table 7.--Lake States pulpwood production by Forest Survey Unit and destination by State, 1986

(In thousand standard cords, unpeeled)

Unit	Total cut	Destination of pulpwood			
		Michigan	Minnesota	Wisconsin	Other
MICHIGAN					
Roundwood					
E. Upper Peninsula	681	585	--	89	7
W. Upper Peninsula	866	613	--	253	1/
N. Lower Peninsula	1,013	1,007	--	3	3
S. Lower Peninsula	55	55	--	--	--
Total	2,615	2,260	--	345	10
Residue	193	169	--	24	--
Total pulpwood	2,808	2,429	--	369	10
MINNESOTA					
Roundwood					
Aspen-Birch	828	--	744	46	38
Northern Pine	965	1/	958	7	--
Central Hardwood	82	--	72	10	--
Prairie	1	--	1	--	--
Total	1,876	1/	1,775	63	38
Residue	103	--	97	6	--
Total pulpwood	1,979	1/	1,872	69	38
WISCONSIN					
Roundwood					
Northeastern	1,102	124	--	978	--
Northwestern	1,017	33	49	935	--
Central	484	--	--	484	--
Southwestern	17	--	--	17	--
Southeastern	15	--	--	15	--
Total	2,635	157	49	2,429	--
Residue	292	21	7	264	--
Total pulpwood	2,927	178	56	2,693	--

1/ Less than 500 cords.

Table 8.--Lake States annual pulpwood production from roundwood by species, State, and Forest Survey Unit, 1982-1986

(In thousand standard cords, unpeeled)

Unit	All species[1]					Pine					Spruce				
	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986
MICHIGAN															
Eastern Upper Peninsula	425	500	510	568	681	77	95	113	101	107	33	45	43	44	50
Western Upper Peninsula	554	619	635	631	866	52	52	73	67	66	34	31	33	40	40
Northern Lower Peninsula	585	802	1,004	953	1,013	118	102	105	146	142	1	1	1	(2/)	3
Southern Lower Peninsula	66	63	59	61	55	15	8	2	(2/)	(2/)	--	--	--	--	--
Total	1,630	1,984	2,208	2,213	2,615	262	257	293	314	315	68	77	77	84	93
MINNESOTA															
Aspen-Birch	618	803	940	782	828	92	68	100	71	74	98	66	90	83	74
Northern Pine	708	942	1,054	951	965	80	67	85	64	60	36	29	27	28	24
Central Hardwood	65	70	63	57	82	7	5	4	3	5	--	(2/)	(2/)	(2/)	(2/)
Prairie	(2/)	1	1	(2/)	1	(2/)	--	(2/)	(2/)	--	--	--	--	--	--
Total	1,391	1,816	2,058	1,790	1,876	179	140	189	138	139	134	95	117	111	98
WISCONSIN															
Northeastern	875	951	963	912	1,102	156	114	111	109	137	23	21	33	26	21
Northwestern	832	925	962	954	1,017	141	125	150	123	105	5	7	8	10	9
Central	303	300	377	385	484	166	137	182	182	233	(2/)	(2/)	1	1	1
Southwestern	23	26	28	29	17	23	25	27	27	16	(2/)	(2/)	(2/)	(2/)	(2/)
Southeastern	10	14	18	15	15	8	11	13	10	9	--	(2/)	--	(2/)	(2/)
Total	2,043	2,216	2,348	2,295	2,635	494	412	483	451	500	28	28	42	37	31
Total Lake States	5,064	6,016	6,614	6,298	7,126	935	809	965	903	954	230	200	236	232	222

(Table 8 continued on next page)

1/ Includes a small quantity of cedar not shown elsewhere in the table.

2/ Less than 500 cords.

(Table 8 continued)

Unit	Balsam fir					Hemlock					Tamarack				
	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986
MICHIGAN															
Eastern Upper Peninsula	56	59	44	49	49	30	27	25	19	24	3	4	5	2	2
Western Upper Peninsula	45	36	31	42	44	26	21	22	18	19	7	3	5	2	2
Northern Lower Peninsula	4	6	3	2	4	(2/)	--	--	--	(2/)	--	--	--	--	--
Southern Lower Peninsula	--	--	--	--	--	--	--	--	--	(2/)	--	--	--	--	--
Total	105	101	78	93	97	56	48	47	37	43	10	7	10	4	4
MINNESOTA															
Aspen-Birch	68	51	88	69	51	--	--	--	--	--	24	12	6	7	13
Northern Pine	38	39	58	53	50	--	--	--	--	--	20	14	5	2	(2/)
Central Hardwood	(2/)	--	--	(2/)	--	--	--	--	--	--	(2/)	(2/)	(2/)	--	--
Prairie	--	--	--	--	--	--	--	--	--	--	(2/)	(2/)	(2/)	--	--
Total	106	90	146	122	101	--	--	--	--	--	44	26	11	9	13
WISCONSIN															
Northeastern	70	61	60	59	36	29	29	21	32	31	2	2	2	1	1
Northwestern	32	22	20	12	9	4	9	3	3	5	4	3	2	(2/)	1
Central	1	2	1	--	1	(2/)	2	1	1	1	1	1	(2/)	(2/)	(2/)
Southwestern	(2/)	--	--	1	--	--	--	--	(2/)	--	(2/)	--	--	--	--
Southeastern	(2/)	--	--	--	(2/)	--	--	--	(2/)	(2/)	--	--	--	--	--
Total	103	85	81	72	46	33	40	25	36	37	7	6	4	1	2
Total Lake States	314	276	305	287	244	89	88	72	73	80	61	39	25	14	19

2/ Less than 500 cords.

(Table 8 continued on next page)

(Table 8 continued)

Unit	Aspen					Birch					Other hardwoods				
	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986	1982	1983	1984	1985	1986
MICHIGAN															
Eastern Upper Peninsula	93	109	117	144	113	31	40	40	41	78	97	106	114	134	225
Western Upper Peninsula	210	242	212	244	252	38	64	54	48	112	135	161	200	154	313
Northern Lower Peninsula	315	523	620	576	599	19	26	26	20	30	128	144	251	209	235
Southern Lower Peninsula	14	15	13	13	15	1	(2/)	(2/)	(2/)	(2/)	36	40	43	48	40
Total	632	889	962	977	979	89	130	120	109	220	396	451	608	545	813
MINNESOTA															
Aspen-Birch	308	563	619	524	575	1	3	2	1	10	27	40	35	27	31
Northern Pine	504	766	853	787	820	2	1	1	1	(2/)	28	26	24	18	11
Central Hardwood	54	62	56	50	73	(2/)	(2/)	(2/)	(2/)	(2/)	4	3	3	3	4
Prairie	--	1	1	--	1	--	--	--	--	--	--	--	--	--	--
Total	866	1,392	1,529	1,361	1,469	3	4	3	2	10	59	69	62	48	46
WISCONSIN															
Northeastern	392	451	435	396	474	69	83	90	82	144	134	190	209	205	258
Northwestern	420	481	522	556	567	74	103	105	98	126	152	175	154	153	195
Central	71	91	107	117	162	11	12	13	13	13	53	56	73	71	73
Southwestern	(2/)	(2/)	(2/)	1	1	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	(2/)	1	1	(2/)
Southeastern	1	2	2	3	4	(2/)	(2/)	(2/)	(2/)	(2/)	1	1	2	1	2
Total	884	1,025	1,066	1,073	1,208	154	198	208	193	283	340	422	439	431	528
Total Lake States	2,382	3,306	3,557	3,411	3,656	246	332	331	304	513	795	942	1,109	1,024	1,387

2/ Less than 500 cords.

Table 9.--Lake States pulpwood production from roundwood by county and species group, 1986

(In standard cords, unpeeled)

MICHIGAN

Unit and county[1/]	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
E. Upper Peninsula												
Alger	86,323	3,085	4,013	7,790	6,027	3,088	1,624	3,719	198	714	5,291	2,113
Chippewa	55,047	4,747	2,059	1,284	10,113	1,852	2,789	4,972	166	280	11,439	1,061
Delta	173,044	8,754	14,259	4,154	12,281	7,441	4,385	15,629	669	1,157	29,734	5,670
Luce	56,694	1,789	1,175	1,606	14,250	729	1,049	3,213	63	388	4,935	370
Mackinac	57,611	1,985	3,943	982	2,474	872	1,034	4,666	133	320	13,081	1,657
Menominee	146,176	4,972	17,533	6,106	3,371	2,624	2,320	9,731	544	1,192	39,093	3,679
Schoolcraft	106,102	8,468	5,994	2,233	19,031	4,509	4,780	7,406	389	603	9,237	3,551
Total	680,997	33,800	48,976	24,155	67,547	21,115	17,981	49,336	2,162	4,654	112,810	18,101
W. Upper Peninsula												
Baraga	60,970	908	463	2,124	3,705	370	525	864	36	765	7,752	--
Dickinson	121,210	4,489	16,820	2,869	1,899	1,195	1,917	12,624	507	395	44,605	1,266
Gogebic	88,412	29	765	1,857	781	568	249	2,307	4	1,917	18,538	--
Houghton	66,621	2,437	4,574	1,484	6,660	939	1,315	3,626	205	1,166	8,586	--
Iron	159,325	1,518	6,161	1,403	6,730	1,101	1,645	7,565	279	1,408	62,876	617
Keweenaw	1,035	--	25	--	109	69	71	--	--	23	--	--
Marquette	249,923	8,562	14,691	8,107	28,440	2,186	4,358	13,160	727	854	42,778	5,393
Ontonagon	118,183	--	221	512	436	332	416	53	--	2,495	67,534	--
Total	865,679	17,943	43,720	18,356	48,760	6,760	10,496	40,199	1,758	9,023	252,669	7,276
N. Lower Peninsula												
Alcona	64,012	--	98	--	4,617	765	--	11	--	480	40,913	1,464
Alpena	33,093	--	181	--	215	--	--	176	--	552	22,987	652
Antrim	1,467	--	--	--	74	293	--	--	--	1	1,034	--
Arenac	4,349	--	--	--	66	23	--	--	--	--	1,021	--
Bay	61	--	--	--	--	--	--	--	--	--	61	--
Benzie	8,924	--	--	--	50	57	--	--	--	4	6,509	--
Charlevoix	2,692	--	--	--	228	53	--	--	--	--	1,319	4
Cheboygan	49,689	--	1,092	--	2,624	758	--	1,406	--	275	31,428	256
Clare	33,068	--	--	--	69	160	--	--	--	10	30,985	--
Crawford	72,080	--	--	--	31,497	652	--	--	--	36	22,584	3
Emmet	17,370	--	633	--	180	173	--	844	--	3	10,343	2
Gladwin	9,259	--	--	--	1,543	96	--	--	--	--	5,857	--
Grand Traverse	18,293	--	--	--	3,788	1,387	--	--	--	94	10,758	--
Iosco	14,435	--	49	--	1,800	1,303	--	4	--	97	7,776	98
Isabella	9,193	--	--	11	--	--	--	--	--	4	8,920	--
Kalkaska	23,888	--	--	--	9,456	2,271	--	--	--	13	10,409	--
Lake	66,171	--	--	--	8,018	713	--	--	--	325	29,526	--
Leelanau	4,429	--	--	--	--	--	--	--	--	--	2,994	--
Manistee	43,153	--	--	--	368	786	--	--	--	535	16,154	--
Mason	35,710	--	--	--	--	--	--	--	--	219	26,346	--
Mecosta	31,009	--	--	--	25	309	--	--	--	33	27,769	--
Midland	10,413	--	--	--	--	--	--	--	--	54	9,308	208
Missaukee	47,309	--	--	--	1,031	2,015	--	--	--	188	40,257	104
Montmorency	56,509	--	426	--	6,415	80	--	219	--	137	35,704	466
Newaygo	42,474	--	--	--	1,076	840	--	--	--	73	21,733	--
Oceana	20,950	--	--	--	--	--	--	--	--	34	16,975	--
Ogemaw	20,598	--	--	--	2,681	38	--	--	--	162	11,062	203
Osceola	45,605	--	--	--	53	1,421	--	--	--	170	36,885	--
Oscoda	74,527	--	43	--	21,832	1,777	--	15	--	449	33,994	664
Otsego	43,970	--	--	--	7,750	1,572	--	--	--	12	20,366	--
Presque Isle	46,503	--	1,188	--	2,440	103	--	547	--	634	27,109	827
Roscommon	31,631	--	--	--	12,051	456	--	--	--	5	14,042	10
Wexford	30,632	--	--	--	180	4,031	--	--	--	403	15,849	--
Total	1,013,466	--	3,710	11	120,127	22,132	--	3,222	--	5,002	598,977	4,961
S. Lower Peninsula												
Allegan	6,136	--	--	--	22	--	--	--	--	301	1,122	--
Barry	3,158	--	--	--	--	--	--	--	--	158	409	--
Berrien	3,045	--	--	--	--	--	--	--	--	--	--	--
Calhoun	331	--	--	--	--	--	--	--	--	18	18	--
Cass	2,835	--	--	--	--	--	--	--	--	154	153	--
Huron	1,086	--	--	--	--	--	--	--	--	--	1,086	--
Ingham	13	--	--	13	--	--	--	--	--	--	--	--
Ionia	847	--	--	--	--	--	--	--	--	--	471	--
Kalamazoo	624	--	--	--	--	--	--	--	--	34	33	--
Kent	1,845	--	--	--	--	--	--	--	--	1	937	--
Montcalm	10,890	--	--	--	--	--	--	--	--	1	8,295	--
Muskegon	14,440	--	--	--	30	19	--	--	--	85	1,404	--
Ottawa	2,216	--	--	--	--	--	--	--	--	3	372	--
St. Joseph	4,373	--	--	--	--	--	--	--	--	238	236	--
Van Buren	3,335	--	--	--	--	--	--	--	--	181	180	--
Total	55,174	--	--	13	52	19	--	--	--	1,174	14,716	--
State total	2,615,316	51,743	96,406	42,535	236,486	50,026	28,477	92,757	3,920	19,853	979,172	30,338

[1/] Includes only those counties that supplied pulpwood in 1986.

(Table 9 continued on next page)

(Table 9 continued)

MICHIGAN

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
E. Upper Peninsula												
Alger	1,591	3,857	4,995	5,705	--	4,420	--	14,883	10,480	385	--	2,345
Chippewa	777	2,459	1,618	1,266	--	554	--	4,002	3,265	222	--	122
Delta	3,837	4,662	14,564	6,519	--	3,019	--	15,649	18,911	664	--	1,086
Luce	308	3,957	1,937	1,314	--	1,578	--	8,739	8,677	182	--	435
Mackinac	1,280	2,144	4,404	1,726	--	917	--	5,337	9,845	199	--	612
Menominee	3,222	3,038	19,955	3,972	--	2,547	--	11,560	8,693	1,318	15	691
Schoolcraft	2,358	3,929	6,653	3,786	--	1,860	--	7,893	11,930	300	--	1,192
Total	13,373	24,046	54,126	24,288	--	14,895	--	68,063	71,801	3,270	15	6,483
W. Upper Peninsula												
Baraga	975	378	3,501	7,371	--	3,189	--	17,202	8,825	478	--	1,539
Dickinson	2,078	--	12,446	1,660	--	1,018	--	10,396	4,133	486	--	407
Gogebic	4,054	128	3,229	6,262	--	2,238	--	32,810	10,861	703	--	1,112
Houghton	2,849	334	3,550	6,608	--	3,599	--	11,117	5,405	1,155	--	1,012
Iron	1,984	826	10,143	5,989	--	6,912	--	28,652	10,190	1,029	--	2,297
Keweenaw	--	30	--	61	--	213	--	274	99	15	--	46
Marquette	4,179	4,226	31,214	9,907	--	3,304	--	35,885	26,648	3,743	--	1,561
Ontonagon	7,653	40	3,972	5,886	--	3,056	--	18,042	6,713	403	--	419
Total	23,772	5,962	68,055	43,744	--	23,529	--	154,378	72,874	8,012	--	8,393
N. Lower Peninsula												
Alcona	47	70	4,441	--	--	--	--	133	3,662	6,596	715	--
Alpena	87	82	2,037	--	--	--	--	216	4,257	1,475	176	--
Antrim	--	--	1	--	--	--	--	1	7	46	10	--
Arenac	42	--	81	--	21	--	--	63	3,013	16	3	--
Bay	--	--	--	--	--	--	--	--	--	--	--	--
Benzie	130	55	660	26	--	--	--	63	966	318	41	45
Charlevoix	--	--	278	--	--	--	--	--	810	--	--	--
Cheboygan	616	1,345	1,576	--	--	--	--	1,593	6,522	188	10	--
Clare	--	10	569	--	--	--	--	15	147	927	176	--
Crawford	45	360	534	--	--	--	--	199	1,111	14,703	356	--
Emmet	146	1,556	15	--	--	--	--	827	2,254	394	--	--
Gladwin	--	--	526	--	104	--	--	1	589	539	4	--
Grand Traverse	104	104	165	--	--	--	--	104	1,565	117	3	104
Iosco	9	15	686	--	--	--	--	24	472	1,979	123	--
Isabella	--	--	4	--	--	--	--	5	26	184	39	--
Kalkaska	36	--	221	--	--	--	--	17	293	1,009	163	--
Lake	312	208	692	--	--	--	--	364	5,375	14,308	5,843	487
Leelanau	22	--	163	--	--	--	--	208	1,042	--	--	--
Manistee	1,096	730	899	416	--	--	--	1,351	7,389	7,971	4,832	626
Mason	208	260	1,053	--	--	--	--	171	3,508	2,660	1,181	104
Mecosta	--	--	181	--	--	--	--	44	583	1,737	328	--
Midland	52	--	241	--	208	--	--	4	123	134	81	--
Missaukee	208	104	672	--	--	--	--	160	1,294	671	553	52
Montmorency	178	375	1,883	--	--	--	--	397	3,092	6,691	446	--
Newaygo	--	--	182	--	--	--	--	97	2,640	9,160	6,673	--
Oceana	--	--	167	--	--	--	--	45	682	2,116	931	--
Ogemaw	64	77	1,732	--	--	--	--	36	1,203	3,103	237	--
Osceola	--	--	871	--	--	--	--	89	2,339	3,110	667	--
Oscoda	121	233	2,214	--	--	--	--	316	3,592	8,668	609	--
Otsego	747	1,532	429	--	--	--	--	2,447	6,830	2,162	123	--
Presque Isle	262	362	4,698	--	--	--	--	556	5,703	1,900	174	--
Roscommon	--	--	1,237	--	--	--	--	7	35	2,959	829	--
Wexford	313	417	517	104	--	--	--	335	4,177	2,932	1,265	109
Total	4,845	7,895	29,625	546	333	--	--	9,888	75,301	98,773	26,591	1,527
S. Lower Peninsula												
Allegan	719	275	--	--	119	280	103	252	1,137	769	1,037	--
Barry	377	144	--	--	63	147	54	132	597	532	545	--
Berrien	--	--	--	--	--	--	312	305	345	1,454	629	--
Calhoun	43	16	--	--	7	16	6	15	68	62	62	--
Cass	368	141	--	--	61	143	53	129	583	519	531	--
Huron	--	--	--	--	--	--	--	--	--	--	--	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	--
Ionia	--	--	--	--	--	--	--	--	39	34	22	281
Kalamazoo	81	31	--	--	13	31	11	28	129	116	117	--
Kent	--	--	1	--	--	--	--	1	112	396	397	--
Montcalm	--	--	1	--	--	--	--	2	322	1,113	1,156	--
Muskegon	--	--	85	--	--	--	--	114	570	7,490	4,643	--
Ottawa	--	--	3	--	--	--	--	4	225	829	780	--
St. Joseph	569	218	--	--	94	221	81	199	899	798	820	--
Van Buren	434	166	--	--	72	168	62	152	686	609	625	--
Total	2,591	991	90	--	429	1,006	682	1,333	5,712	14,721	11,364	281
State total	44,581	38,894	151,896	68,578	762	39,430	682	233,662	225,688	124,776	37,970	16,684

[1/] Includes only those counties that supplied pulpwood in 1986.

(Table 9 continued)

MINNESOTA

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Aspen-Birch												
Carlton	--	--	1,114	--	--	--	--	--	--	--	--	--
Cook	--	--	10	--	--	--	--	13	--	--	--	--
Koochiching	--	--	750	--	--	--	--	21	27	--	--	--
Lake	--	--	6,271	--	--	--	--	--	--	--	--	--
St. Louis	--	--	1,450	--	--	--	--	--	--	--	--	--
Total	--	--	9,595	--	--	--	--	34	27	--	--	--
Northern Pine												
Aitkin	--	--	153	--	--	--	--	--	--	--	--	--
Becker	--	--	0	--	--	--	--	--	--	--	--	--
Beltrami	--	--	13	--	--	--	--	17	--	--	--	--
Cass	--	--	39	--	--	5	--	2	3	--	--	--
Clearwater	--	--	--	--	--	--	--	--	--	--	--	--
Crow Wing	--	--	--	--	--	--	--	--	--	--	--	--
Hubbard	--	--	--	--	--	--	--	--	--	--	--	--
Itasca	--	--	209	--	--	--	--	--	--	--	--	--
Lake of the Woods	--	--	--	--	--	--	--	--	--	--	--	--
Mahnomen	--	--	--	--	--	--	--	--	--	--	--	--
Roseau	--	--	--	--	--	--	--	--	--	--	--	--
Wadena	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	414	--	--	5	--	19	3	--	--	--
Central Hardwood												
Isanti	--	--	--	--	--	--	--	--	--	--	--	--
Kanabec	--	--	--	--	--	--	--	--	--	--	--	--
Mille Lacs	--	--	--	--	--	--	--	--	--	--	--	--
Morrison	--	--	--	--	--	--	--	--	--	--	--	--
Pine	--	--	11	--	--	--	--	--	--	--	--	--
Sherburne	--	--	--	--	--	--	--	--	--	--	--	--
Todd	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	11	--	--	--	--	--	--	--	--	--
Prairie												
Polk	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--	--
State total	--	--	10,020	--	--	5	--	53	30	--	--	--

(Table 9 continued on next page)

[1/] Includes only those counties that supplied pulpwood in 1986.

(Table 9 continued)

MINNESOTA

Unit and county[1/]	All species	Species group										
		Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Aspen-Birch												
Carlton	27,961	--	4,290	--	615	636	20	1,882	63	--	16,746	2,595
Cook	49,684	--	3,499	--	1,072	2,478	1,160	11,166	--	--	30,240	46
Koochiching	191,139	--	13,972	--	17,175	4,628	452	24,088	10,659	--	114,791	4,576
Lake	115,097	--	5,549	--	1,552	1,859	777	10,806	25	--	84,919	3,339
St. Louis	444,277	--	23,727	--	29,713	10,492	2,038	25,930	1,772	--	328,883	20,272
Total	828,158	--	51,037	--	50,127	20,093	4,447	73,872	12,519	--	575,579	30,828
Northern Pine												
Aitkin	73,829	--	379	--	215	161	8	1,594	--	--	64,180	7,139
Becker	24,438	--	--	--	120	56	11	--	--	--	24,124	127
Beltrami	148,180	--	15,153	--	4,688	3,204	340	2,386	72	--	122,021	286
Cass	128,609	--	5,138	--	6,195	2,246	467	837	21	8	113,055	593
Clearwater	83,785	--	831	--	728	431	57	582	--	--	80,997	159
Crow Wing	29,997	--	--	--	2,775	740	189	121	--	--	26,039	133
Hubbard	97,995	--	--	--	5,578	2,271	471	97	42	--	89,218	318
Itasca	339,122	--	28,051	--	8,377	2,402	429	10,768	94	--	286,182	2,610
Lake of the Woods	16,979	--	518	--	9,318	58	--	5,752	83	--	1,250	--
Mahnomen	6,463	--	--	--	--	--	--	--	--	--	6,447	16
Roseau	7,804	--	--	--	5,492	--	--	2,203	109	--	--	--
Wadena	8,463	--	--	--	1,850	494	126	--	--	--	5,960	33
Total	965,664	--	50,070	--	45,336	12,063	2,098	24,340	421	8	819,473	11,414
Central Hardwood												
Isanti	504	--	--	--	340	164	--	--	--	--	--	--
Kanabec	716	--	--	--	--	--	--	--	--	--	716	--
Mille Lacs	31,303	--	--	--	92	25	6	97	--	--	31,070	13
Morrison	8,271	--	--	--	92	25	6	--	--	--	8,141	7
Pine	38,901	--	--	--	1,503	1,127	55	--	--	--	32,572	3,633
Sherburne	1,091	--	--	--	250	841	--	--	--	--	--	--
Todd	820	--	--	--	92	25	6	--	--	--	690	7
Total	81,606	--	--	--	2,369	2,207	73	97	--	--	73,189	3,660
Prairie												
Polk	833	--	--	--	--	--	--	--	--	--	833	--
Total	833	--	--	--	--	--	--	--	--	--	833	--
State total	1,876,261	--	101,107	--	97,832	34,363	6,618	98,309	12,940	8	1,469,074	45,902

[1/] Includes only those counties that supplied pulpwood in 1986.

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and county[1/]	All species	Species group: Cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Northeastern												
Florence	105,086	--	5,208	2,746	8,047	2,986	197	3,470	98	953	35,860	--
Forest	156,555	--	8,936	2,315	832	8,505	205	6,479	80	5,402	47,583	--
Langlade	107,879	--	2,225	703	2,534	6,910	81	652	13	4,665	43,255	--
Lincoln	128,284	--	2,775	2,677	4,536	6,470	435	993	97	4,188	63,163	--
Marinette	180,627	--	6,248	261	20,662	5,660	265	2,433	103	1,383	97,374	--
Menominee	51,233	--	--	18,227	5,092	1,864	790	--	--	509	11,820	--
Oconto	68,391	--	1,647	205	3,125	8,855	290	205	188	732	36,498	--
Oneida	139,426	--	6,032	741	11,274	12,285	3,296	4,939	333	2,893	56,208	--
Shawano	31,211	--	80	1,670	849	5,574	244	32	32	803	13,776	--
Vilas	132,820	--	2,489	1,121	10,862	3,274	1,335	1,845	132	852	69,157	--
Total	1,101,512	--	35,640	30,666	67,813	62,383	7,138	21,048	1,076	22,380	474,694	--
Northwestern												
Ashland	74,128	--	3,215	471	1,483	2,871	89	4,345	213	2,163	32,216	--
Barron	18,302	--	39	--	254	786	26	11	--	186	14,384	--
Bayfield	186,504	--	456	--	18,167	7,358	760	72	--	1,023	113,130	1,298
Burnett	46,068	--	--	--	11,843	1,699	20	24	46	--	30,490	--
Douglas	118,152	--	339	34	24,319	6,317	46	139	20	1,157	71,164	1,038
Iron	83,841	--	472	214	778	366	178	396	--	1,380	42,547	--
Polk	14,100	--	--	--	2,040	--	--	--	--	6	11,867	--
Price	113,661	--	2,063	1,386	2,334	3,110	85	1,405	147	8,078	41,824	--
Rusk	53,579	--	6	165	--	1,243	--	60	24	2,974	30,048	--
Sawyer	129,931	--	853	533	1,202	2,009	64	1,637	25	4,675	73,452	--
Taylor	81,861	--	1,965	2,053	299	3,365	--	374	32	3,787	37,973	--
Washburn	96,736	--	54	--	8,319	3,012	572	24	--	2,563	67,793	260
Total	1,016,863	--	9,462	4,856	71,038	32,136	1,840	8,487	507	27,992	566,888	2,596
Central												
Adams	46,577	--	26	--	16,974	24,003	1,467	--	8	22	1,122	--
Chippewa	30,703	--	57	54	686	1,982	185	77	--	1,175	17,291	--
Clark	68,686	--	60	20	5,389	2,294	--	28	--	2,169	39,626	--
Eau Claire	29,252	--	--	23	6,204	8,516	190	32	--	40	12,663	--
Jackson	43,905	--	--	73	24,810	5,634	419	13	--	42	5,751	--
Juneau	42,058	--	--	--	24,971	8,088	669	--	--	70	3,482	--
Marathon	72,981	--	344	941	1,326	6,643	253	273	108	1,433	44,955	--
Marquette	12,746	--	--	--	2,023	6,437	1,195	--	--	208	250	--
Monroe	17,031	--	--	--	8,276	6,294	278	--	--	92	214	--
Portage	26,756	--	25	186	4,381	10,090	1,259	416	10	228	6,317	--
Waupaca	19,562	--	13	112	177	7,346	718	13	--	81	9,170	--
Waushara	28,620	--	--	10	2,969	22,564	1,979	--	--	3	918	--
Wood	44,785	--	--	10	8,259	6,496	1,092	38	--	345	20,641	--
Total	483,662	--	525	1,429	106,445	116,387	9,704	890	126	5,908	162,400	--
Southwestern												
Buffalo	1,317	--	--	--	30	1,166	46	24	--	2	--	--
Crawford	41	--	--	--	--	17	--	5	--	--	19	--
Dunn	8,168	--	--	--	2,681	4,742	131	--	--	10	499	--
Grant	6	--	--	--	--	--	6	--	--	--	--	--
Iowa	175	--	--	--	--	158	6	--	--	--	11	--
La Crosse	1,694	--	--	--	252	1,318	114	--	--	--	--	--
Lafayette	15	--	--	--	15	--	--	--	--	--	--	--
Pepin	174	--	--	--	--	36	--	93	--	--	45	--
Pierce	120	--	--	--	16	14	--	--	--	2	57	--
Richland	24	--	--	--	24	--	--	--	--	--	--	--
St. Croix	265	--	--	--	14	196	36	--	--	--	19	--
Sauk	2,008	--	--	--	170	1,733	105	--	--	--	--	--
Trempealeau	3,431	--	--	--	35	2,893	99	96	--	--	156	--
Vernon	6	--	--	--	--	--	--	--	--	--	6	--
Total	17,444	--	--	--	3,237	12,273	543	218	--	14	812	--
Southeastern												
Brown	622	--	--	--	--	100	--	--	--	--	522	--
Columbia	8,020	--	--	--	296	5,637	235	--	--	52	75	--
Door	1,380	--	--	--	--	--	--	--	--	--	1,380	--
Green Lake	1,109	--	--	--	13	1,024	72	--	--	--	--	--
Jefferson	13	--	--	--	--	13	--	--	--	--	--	--
Kenosha	97	--	--	--	--	97	--	--	--	--	--	--
Kewaunee	138	--	--	10	13	49	--	--	--	--	66	--
Manitowoc	17	--	7	10	--	--	--	--	--	--	--	--
Outagamie	2,112	--	--	--	--	503	28	16	--	7	1,497	--
Ozaukee	29	--	--	--	--	29	--	--	--	--	--	--
Sheboygan	52	--	--	--	--	25	27	--	--	--	--	--
Walworth	413	--	--	--	--	413	--	--	--	--	--	--
Washington	11	--	--	--	--	11	--	--	--	--	--	--
Waukesha	829	--	--	--	--	598	231	--	--	--	--	--
Total	14,842	--	7	20	322	8,499	593	16	--	59	3,540	--
State total	2,634,323	--	45,634	36,971	248,855	231,678	19,818	30,659	1,709	56,353	1,208,334	2,596

[1/] Includes only those counties that supplied pulpwood in 1986.

(Table 9 continued on next page)

(Table 9 continued)

WISCONSIN

Unit and county[1/]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Northeastern												
Florence	1,530	56	16,041	2,548	--	1,013	--	17,893	4,500	1,512	42	386
Forest	5,769	466	15,212	4,458	--	5,625	--	29,716	12,054	595	6	2,317
Langlade	2,725	60	10,524	1,814	--	1,024	--	21,491	7,433	186	27	1,557
Lincoln	1,731	21	7,075	793	--	6,204	--	14,058	12,322	58	--	688
Marinette	1,114	50	23,557	969	--	966	--	5,680	6,779	6,597	132	394
Menominee	76	799	843	922	--	2,306	--	4,663	2,550	388	25	359
Oconto	907	61	7,388	240	--	631	--	1,859	2,819	2,646	7	88
Oneida	1,026	9	23,166	1,418	--	264	--	8,462	6,182	550	--	348
Shawano	169	243	1,461	138	--	1,043	--	2,233	1,515	866	60	423
Vilas	972	21	23,503	1,310	--	401	--	8,781	3,686	2,779	114	186
Total	16,019	1,786	128,770	14,610	--	19,477	--	114,836	59,840	16,177	413	6,746
Northwestern												
Ashland	417	--	9,302	760	--	305	--	8,930	6,452	457	208	231
Barron	58	--	1,045	--	--	114	93	103	145	617	376	65
Bayfield	462	--	32,565	445	--	380	--	5,061	2,764	2,285	245	33
Burnett	3	--	1,669	--	--	--	--	104	118	52	--	--
Douglas	--	--	11,336	163	--	222	--	788	986	61	23	--
Iron	1,996	35	13,247	2,785	--	692	--	11,882	5,381	1,028	--	464
Polk	121	--	18	--	--	--	--	3	7	27	10	1
Price	1,777	--	15,211	2,184	--	2,495	279	14,775	13,353	2,297	102	756
Rusk	906	--	7,452	495	--	433	--	3,726	3,786	1,798	276	187
Sawyer	3,985	--	13,663	1,735	--	4,104	186	12,231	6,557	2,537	212	271
Taylor	1,186	3	5,022	1,046	--	4,843	--	8,478	10,921	444	--	70
Washburn	96	--	5,999	94	--	517	--	1,866	2,036	3,059	237	235
Total	11,007	38	116,529	9,707	--	14,105	558	67,947	52,506	14,662	1,689	2,313
Central												
Adams	13	--	43	--	--	--	--	31	48	2,263	557	--
Chippewa	394	--	3,495	233	--	105	--	2,331	1,808	584	195	51
Clark	95	3	3,425	222	--	1,327	--	2,930	6,054	3,142	1,775	127
Eau Claire	48	--	317	--	--	69	--	136	493	385	103	33
Jackson	--	--	892	--	--	78	--	201	1,857	2,995	1,027	113
Juneau	--	--	344	--	--	17	--	174	259	2,816	1,151	17
Marathon	205	17	1,364	853	--	5,807	--	3,627	3,785	752	251	44
Marquette	--	--	417	42	--	--	--	507	313	833	521	--
Monroe	--	--	254	--	--	51	--	134	232	807	369	30
Portage	3	--	459	--	--	24	--	373	300	1,737	947	1
Waupaca	84	3	135	6	--	215	--	490	489	370	135	5
Waushara	--	--	28	--	--	11	--	25	26	56	31	--
Wood	9	6	379	37	--	44	--	1,035	1,138	3,396	1,852	8
Total	851	29	11,552	1,393	--	7,748	--	11,994	16,802	20,136	8,914	429
Southwestern												
Buffalo	--	--	18	--	--	6	--	2	5	9	--	9
Crawford	--	--	--	--	--	--	--	--	--	--	--	--
Dunn	1	--	9	1	--	1	--	11	18	40	22	2
Grant	--	--	--	--	--	--	--	--	--	--	--	--
Iowa	--	--	--	--	--	--	--	--	--	--	--	--
La Crosse	--	--	--	--	--	1	--	--	3	6	--	--
Lafayette	--	--	--	--	--	--	--	--	--	--	--	--
Pepin	--	--	--	--	--	--	--	--	--	--	--	--
Pierce	--	--	--	--	--	3	--	20	--	8	--	--
Richland	--	--	--	--	--	--	--	--	--	--	--	--
St. Croix	--	--	--	--	--	--	--	--	--	--	--	--
Sauk	--	--	--	--	--	--	--	--	--	--	--	--
Trempealeau	--	--	35	--	--	2	--	--	10	58	42	5
Vernon	--	--	--	--	--	--	--	--	--	--	--	--
Total	1	--	62	1	--	13	--	33	36	121	64	16
Southeastern												
Brown	--	--	--	--	--	--	--	--	--	--	--	--
Columbia	--	--	104	31	--	21	--	109	105	1,042	313	--
Door	--	--	--	--	--	--	--	--	--	--	--	--
Green Lake	--	--	--	--	--	--	--	--	--	--	--	--
Jefferson	--	--	--	--	--	--	--	--	--	--	--	--
Kenosha	--	--	--	--	--	--	--	--	--	--	--	--
Kewaunee	--	--	--	--	--	--	--	--	--	--	--	--
Manitowoc	--	--	--	--	--	--	--	--	--	--	--	--
Outagamie	--	9	5	--	--	9	--	18	20	--	--	--
Ozaukee	--	--	--	--	--	--	--	--	--	--	--	--
Sheboygan	--	--	--	--	--	--	--	--	--	--	--	--
Walworth	--	--	--	--	--	--	--	--	--	--	--	--
Washington	--	--	--	--	--	--	--	--	--	--	--	--
Waukesha	--	--	--	--	--	--	--	--	--	--	--	--
Total	--	9	109	31	--	30	--	127	125	1,042	313	--
State total	27,878	1,862	257,022	25,742	--	41,373	558	194,937	129,309	52,138	11,393	9,504

[1/] Includes only those counties that supplied pulpwood in 1986.

Table 10.--Central States pulpwood production by State and destination, 1982-1986

(In thousand standard cords, unpeeled)

	Illinois			Indiana			Iowa			Missouri		
		Destination			Destination			Destination			Destination	
Year	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States	Total	Central States	Other States
1982	76	19	57	185	51	134	14	10	4	81	23	58
1983	91	31	60	226	62	164	16	11	5	114	39	75
1984	82	29	53	206	56	150	20	14	6	86	32	54
1985	68	25	43	224	68	156	19	13	6	91	27	64
1986	69	30	39	153	64	89	21	17	4	87	26	61

Table 11.--Trends in receipts of roundwood and residue as pulpwood, Central States, 1982-1986

(In thousand standard cords, unpeeled)

Type of material and area	1982	1983	1984	1985	1986
Roundwood					
Illinois	--	--	--	--	--
Indiana, Iowa, Missouri	40	69	62	63	57
Total	40	69	62	63	57
Residue					
Illinois	--	--	--	--	--
Indiana, Iowa, Missouri	63	79	70	73	81
Total	63	79	70	73	81
All material	103	148	132	136	138

☆U.S. GOVERNMENT PRINTING OFFICE: 1988 - 557-085/80

Blyth, James E.; Smith, W. Brad.
1988. Pulpwood production in the North-Central Region by county, 1986. Resour. Bull. NC-106. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station 26 p.

Discusses production and receipts for 1986 and production for recent years in the Lake and Central States. Shows Michigan, Minnesota, and Wisconsin production by species for each county and compares production by Forest Survey Unit with that of previous years. Presents 1986 production and receipt data for Illinois, Indiana, Iowa, and Missouri, and shows four production classes by county.

KEY WORDS: Roundwood, residue, receipts, Lake States, Central States.

FINDING OUT AND TELLING

Our job at the North Central Forest Experiment Station is discovering and creating new knowledge and technology in the field of natural resources and conveying this information to the people who can use it--in short, "finding out and telling." As a new generation of forests emerges in our region, managers are confronted with two unique challenges: (1) Dealing with the great diversity in composition, quality, and ownership of the forests, and (2) Reconciling the conflicting demands of the people who use them. Helping the forest manager to meet these challenges while protecting the environment is what research at North Central is all about.

NORTH CENTRAL
FOREST
EXPERIMENT STATION